



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/621,879	07/17/2003	Mona M. Eissa	TI-28394.1	3091
23494	7590	06/13/2006	EXAMINER	
TEXAS INSTRUMENTS INCORPORATED			CHEN, KIN CHAN	
P O BOX 655474, M/S 3999			ART UNIT	
DALLAS, TX 75265			PAPER NUMBER	

1765

DATE MAILED: 06/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/621,879

Applicant(s)

EISSA, MONA M.

Examiner

Kin-Chan Chen

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 22, 24-26 and 28-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 24 and 28-31 is/are allowed.
- 6) ☒ Claim(s) 22, 25 and 26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 22, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kwag et al.(US 6,232,228) as evidenced by Lee (U.S. 6,162,671).

Kwag teaches a method for etching conductive material (e.g.,copper), barrier metal (e.g., TaN) and dielectric materials (such as silicon nitride, TEOS) using an etching solution of a mixture of one oxidant (e.g., hydrogen peroxide), one enhancer (e.g., HF) and a buffer solution (e.g., deionized water). The etching solution may be applied in the presence of photoresist. The temperature in a range from 20 to 90 °C may be used, which encompasses the claimed temperature or range. See col. 4, lines 2-25; 45-60 and col. 5, lines 27-43; col. 8, lines 15-18; col. 11, line 40.

Kwag is not particular about the concentrations of HF and hydrogen peroxide being used in the process. Hence, it would have been obvious to one with ordinary skilled in the art to use commonly available concentrations of HF and hydrogen

Art Unit: 1765

peroxide as instantly claimed. See Lee (U.S. 6,162,671; col. 6) as evidence. It is noted that applicant did not traverse the aforementioned conventionality (e.g., well-known features, common knowledge, obviousness), which have been stated in the previous office action (August 29, 2005).

The instant claims differ from Kwag by specifying volume ratio of hydrofluoric acid : hydrogen peroxide : water may be **greater than 1:1:20** of HF:H<sub>2</sub>O<sub>2</sub> : deionized water in claims 22 and 26). However, Kwag shows various examples in col. 4 which shows HF : oxidant: deionized water could be **greater than 1:1:20**. Kwag also teaches that the etch properties can be easily changed by adjusting the etching composition (col. 16, lines 63-67). The etchant composition is known to be a result-effective variable. In the absence of showing criticality or new, unexpected results, which is different in kind and not merely in degree from the results of the prior art, it is the examiner's position that a person having ordinary skill in the art at the time of the claimed invention would have found it obvious to modify Kwag by using various compositions and determine the suitable volume ratio through routine experimentation in order to obtain the best etched product achievable. MPEP 2144.05 II.

***The amounts of an ingredient would have been well within the ordinary skill in the art, absent a showing of criticality. See In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).***

***"The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation where in a disclosed set of percentage ranges is the optimum combination of percentages" In re Peterson, 315 F.3d 1325, 1330, 65 USPQ2d 1379, 1382-83 (Fed.Cir. 2003).***

### **Response to Arguments**

Art Unit: 1765

3. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

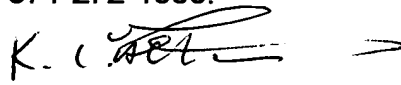
4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lee (U.S. 6,162,671; col. 6) teaches using commonly available concentrations of HF and hydrogen peroxide and temperature as instantly claimed for wet etching.

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Art Unit: 1765

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kin-Chan Chen whose telephone number is (571) 272-1461. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Kin-Chan Chen  
Primary Examiner  
Art Unit 1765

June 8, 2006